

RESEARCH OF FORMS AND METHODS OF COMMERCIALIZATION OF  
INTELLECTUAL PROPERTY OBJECTS

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**SUMMARY**

*The article provides a scientific substantiation of the methodological foundations of modeling the process of specialization of intellectual technologies, development based on basic models for different conditions of their use, formulation of proposals for the organization of specialization of technologies at industrial enterprises. It is proved that commercialization of intellectual property is one of the most important tasks of innovation activity. It is substantiated that it is through the processes of commercialization that intellectual and innovative technologies enter the market. The introduction of intellectual property objects into economic circulation can be carried out by various methods and forms, which differ significantly from each other. The main factors that affect the speed, efficiency and time of commercialization of innovations are the costs of their creation and profits from their use. These factors have the greatest influence on the choice of the form and method of commercialization of intellectual property objects by the enterprise-developer.*

*The authors prove that the main factor influencing the choice of the form and method of commercialization of intellectual property is the resource provision of an industrial enterprise. It depends on this whether it is expedient for an enterprise to introduce the results of innovative activity into economic circulation independently, or with the participation of another enterprise, or to completely outsource this process to intellectual outsourcing. It should be noted that each method has its advantages and disadvantages, which are mainly manifested for profit received, commercialization costs and the amount of responsibility for the implementation of this process. In further researches, it is necessary to compare the forms and methods of commercialization of intellectual property objects with the state of modern industrial enterprises and to explore the potential possibilities of their use.*

**INTRODUCTION**

Research and development of scientific and technical potential and motivation for innovative activity in industrial enterprises depend, first, on the level of development of existing problems of development and use of intellectual and innovative technologies and development of information support of the production sphere. In the algorithm of effective implementation of innovation activity, the most important relevance is the moment of transfer of intellectual-innovative technology from the scientific sphere to the production sphere, namely its introduction into economic circulation. Despite a significant amount of scientific research and practical experience gained recently, there are a large number of problems in the effective implementation of technology commercialization, the consideration of which could provide

unified approaches to the commercialization process from idea to practical result. Scientific research and analysis of these issues are particularly important today and provide an opportunity to better and more accurately understand the process of commercialization of intellectual and innovative technologies.

In most European countries, innovation technologies have become the most important factor in ensuring their economic growth, accelerating the scientific and technological progress, and have become the main driving force for overcoming the instability of the economy and crisis phenomena in it. Under these conditions, forms and methods of commercialization of innovative technologies become the main factor of improvement of dynamics and quality of economic development. As the experience of developed countries shows, the specialization of intellectual technologies not only expands opportunities, and accelerates the pace of innovation, but also creates additional incentives to intensify scientific research.

According to the world statistics, currently 80% of the total number of patents for new technology and engineering are held by more than 70 thousand. transnational corporations, which form the future technological basis of the world's economic development. According to the projected estimates of the UN experts, the base of the world economy as early as 2025 will consist of industries of V and VI technological modes, since now 80-95% of GDP growth of European countries falls on new knowledge, embodied in high-tech products, technologies, methods of production organization and increasing the efficiency of research and development. Economically developed countries have long and successfully used forms and methods of commercialization of intellectual to regulate the relationship between science and industry through national systems of technology transfer, as technology transfer as a component of the innovation process creates organizational and economic conditions for the use of scientific and technological potential in the private sector of the economy, small and medium-sized businesses.

## BASIC MODELS OF COMMERCIALIZATION OF INNOVATIONS

The study of the most commonly used models of technology commercialization [1-24] allows us to distinguish the following: use in own production; sale of property rights; licensing; strategic alliance; joint venture; creation of a spin-off company.

**The actual use of** technology in production and commercial activities implies that the new technology or its elements will become a production resource of the enterprise-developer. In this form of commercialization, the patent holder is the only one who makes a profit, the only player in the market, which gives him the opportunity to maintain a monopoly position in the market (Fig. 1).

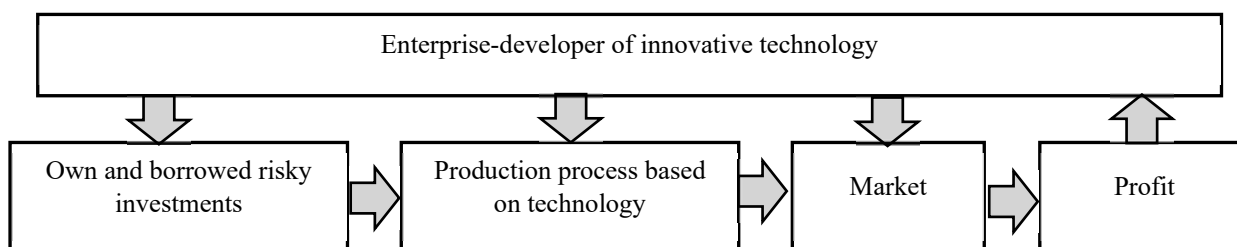


Figure 1 - Scheme of the model of commercialization of innovative technologies - "own use"

Source: own creation

The scheme illustrated in Fig. 1 allows us to note that the principle of this model of commercialization is the total control of the technology developer over the innovation process and the localization of the full amount of profits from commercialization in the hands of one

owner, which is generally a plus for the enterprise in the implementation of risky investments. If you decide to use innovative technologies in your own production, then if they meet the needs of production, they can bring additional income to the owner. That is, this method of commercialization is justified, but it requires considerable funds, first, for the development, creation of technology and bringing it to an operational state.

When using innovative technology in own production, it is possible to issue non-exclusive licenses, which implies the presence of a large number of licensors, or use leasing for equipment, franchise or engineering in the form of consulting services, etc.

***Sale of property rights*** is one of the simplest forms of commercialization. Property (exclusive) rights to intellectual technologies have all commodity features (usefulness - can satisfy needs; rarity - allows to turn the technology into a commodity; universality - i.e. suitability for exchange for other goods or money), as they are the result of labor and therefore have a certain price. Unlike material goods for innovative technologies, the sale is realized only if there are opportunities to alienate exclusive rights both from a specific person (inventor) and from the organization-developer [15, 19, 24]. Only in such cases, the rights to innovative technologies can acquire the characteristics of goods in its usual sense. It should be noted that only those technologies that can be separated from a person or enterprise (inventions, trademarks, works of literature, audio and video programs, etc.) Non-separable exclusive rights from a person (knowledge, creative abilities, skills, etc.) and from an enterprise (personnel, marketing, business reputation, etc.) cannot be a commodity. Another thing is that they can be transferred together with the enterprise or person. In particular, it is not possible to completely transfer the professionalism (outstanding organizational skills) of the director of a given enterprise to the director of another enterprise, but it is possible to invite this talented person to work for you, offering him more favorable working conditions.

This model of technology commercialization involves the implementation of all stages of the commercialization process by another company that is sufficiently knowledgeable in this area. Its use requires a written agreement with appropriate terms of sale. Usually, when a buyer (consumer) buys, for example, a patent, the price also includes assistance to a scientific institution in its implementation, but this practice is not always applied (it depends, in particular, on the degree of development of the acquired technology, know-how, buyer, etc.) The structure of such an agreement is not as complicated as in the case of, for example, a license agreement.

*Licensing of property rights* can be briefly described as granting permission to a third party to exercise the property rights with due consideration. Licensing provides additional profit to the patent owner from the sale of the license (Fig.2).

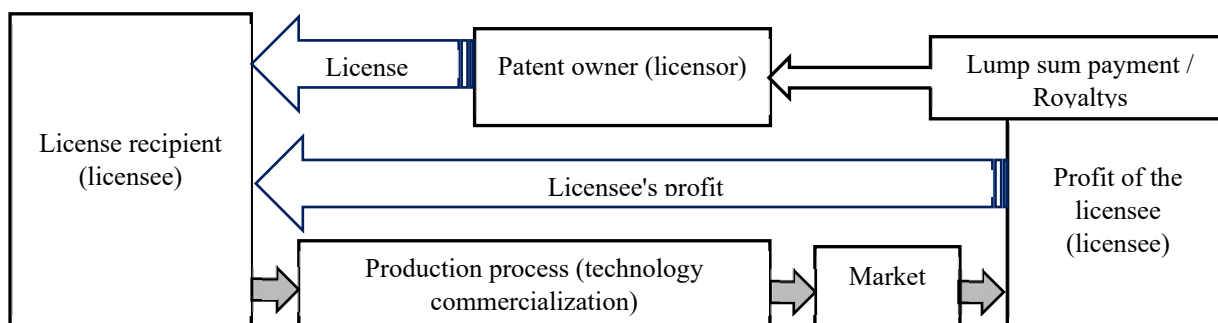


Figure 2 - Scheme of the model of commercialization of innovative technologies - "licensing"  
*Source: own creation*

The sale of a license allows the licensor to solve problems when, for example, the demand for products exceeds the volume of its own production, when funds are needed to improve production or when market conditions suddenly deteriorate.

As with the transfer of ownership, the license agreement must be concluded in writing. License agreements may cover the maximum term of the patent - if the license term is not specified in the license agreement, it is valid for the entire term of the patent (for example, 20 years). The content of the license agreement must contain at least information on the subject matter of the license, its validity period, the scope of use, the territory in which it is valid (the license agreement may be, for example, regional) or the amount of the license fee. Unless otherwise specified, the licensor is obliged to provide all the information and technical experience that he possesses at the time of the conclusion of the contract necessary for the use of the invention. In addition, in case of transfer of a patent encumbered with a license, the license agreement is valid for the assignee.

*A strategic alliance* implies the presence of at least two companies that conduct joint research and development activities with a given scientific organization or institution (Fig. 3).

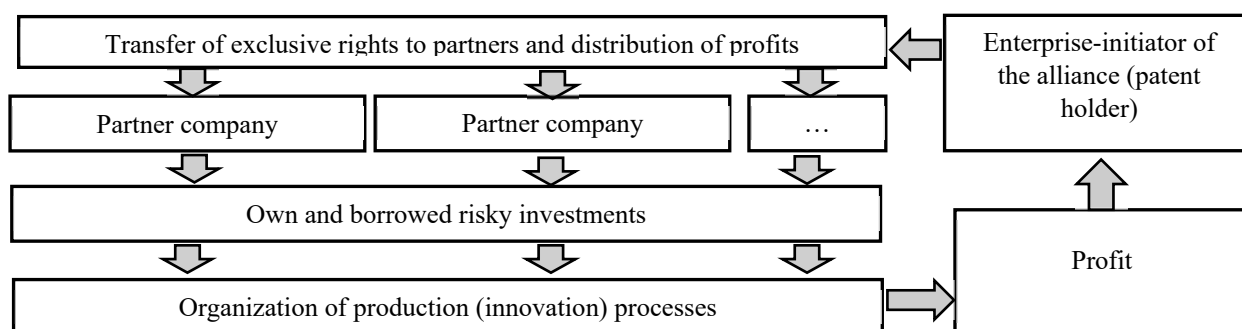


Figure 3 - Scheme of the model of commercialization of innovative technologies - "strategic alliance"  
*Source: own creation*

The main advantage of using the model of commercialization of innovative technologies "strategic alliance" for the basic enterprise (enterprise that implements the rights to intellectual activity) is the division of efforts and risks with partner enterprises. However, it should not be forgotten that the profit is also distributed among the participants of the investment process, most often in proportion to the investments made.

Usually, the partners of the initiator of the alliance are enterprises from the same industry, competitive, which see the benefits of cooperation, such as cost and risk sharing. Alliances arise, for example, in the automotive industry, where competing companies commission research departments to develop, for example, a new part or assembly for them, which the companies will then use in their car models. Then a tripartite agreement is concluded, in which the scientific institution is a full participant.

An interesting form of commercialization is the creation of a joint venture. A joint venture is created to combine the assets of enterprises. For example, an enterprise has created an innovative technology (product), but it does not have the appropriate financial capabilities to bring it to the target market. This form involves the presence of two parties to create a third party or an agreement, for example, a researcher (scientist) and a company, according to which the researcher contributes technology in exchange for market access and, for example, joint settlement. The essence of this form of commercialization is the transfer of intellectual property rights within the joint venture. The main function is to minimize the level of entrepreneurial (commercial) risk and production costs (Fig.4).

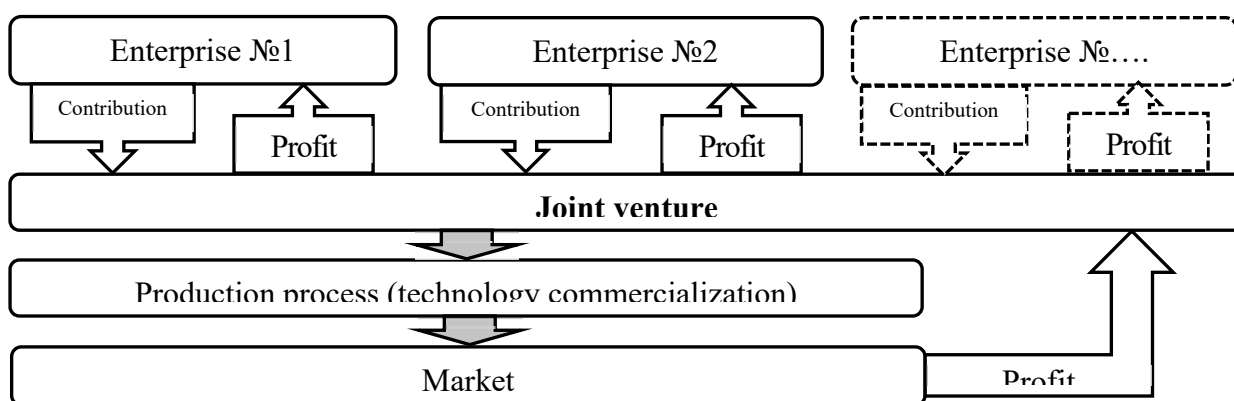


Figure 4 - Scheme of the model of commercialization of innovative technologies - "joint venture"

*Source: own creation*

A joint venture can be a form of commercialization of a spin-off, however, under its "pure" formula, both parties usually always contribute cash (rather than property).

### **COMMERCIALIZATION OF INNOVATIONS IN THE FORM OF SPIN-OFF / SPIN-OUT**

The process of commercialization of innovations using *spin-offs* or spin-outs requires a separate discussion due to differences in definitions. It is generally accepted that a spin-off company is a knowledge/technology based enterprise founded by an individual/s from a research institution or organisation from the academic community. Such persons are mainly understood here as academic or scientific and pedagogical staff, and preferably postgraduate students, undergraduates or doctoral students.

The methodological content of the selected enterprise is illustrated in Fig. 5, which shows that technology initiates the creation of a new product.

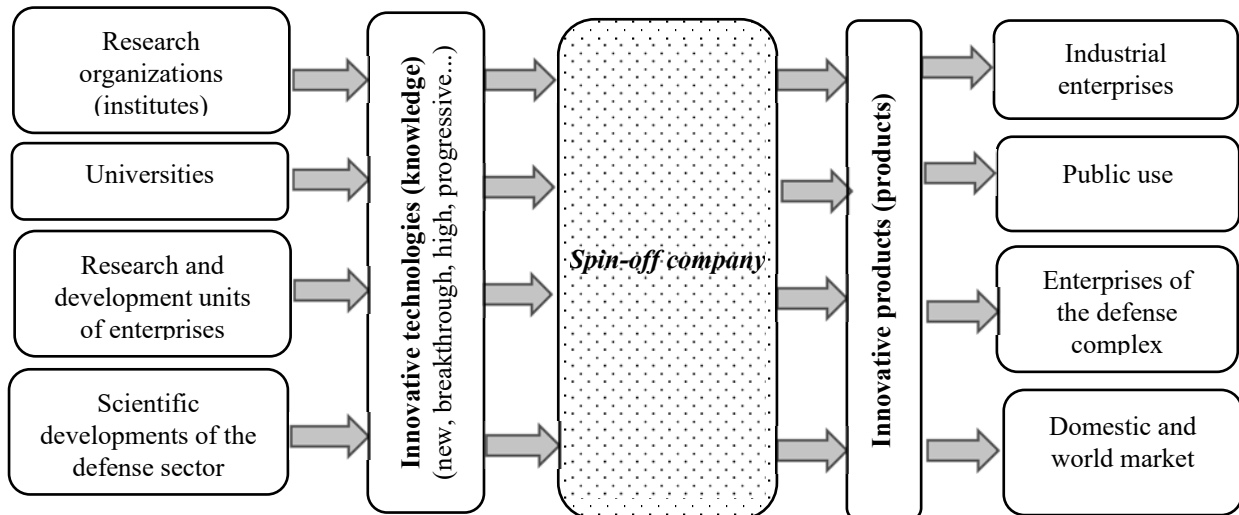


Figure 5 - Methodological content of the technology commercialization method using a spin-off company  
*Source: own creation*

Methodological provisions of organizational support of the technology commercialization process with the use of a spin-off enterprise provide for the participation of at least four parties: developer, research organization (university), entrepreneur, venture investor. Their interaction is provided by a specialized (dedicated) enterprise. The scheme of this interaction is presented in Fig. 6.

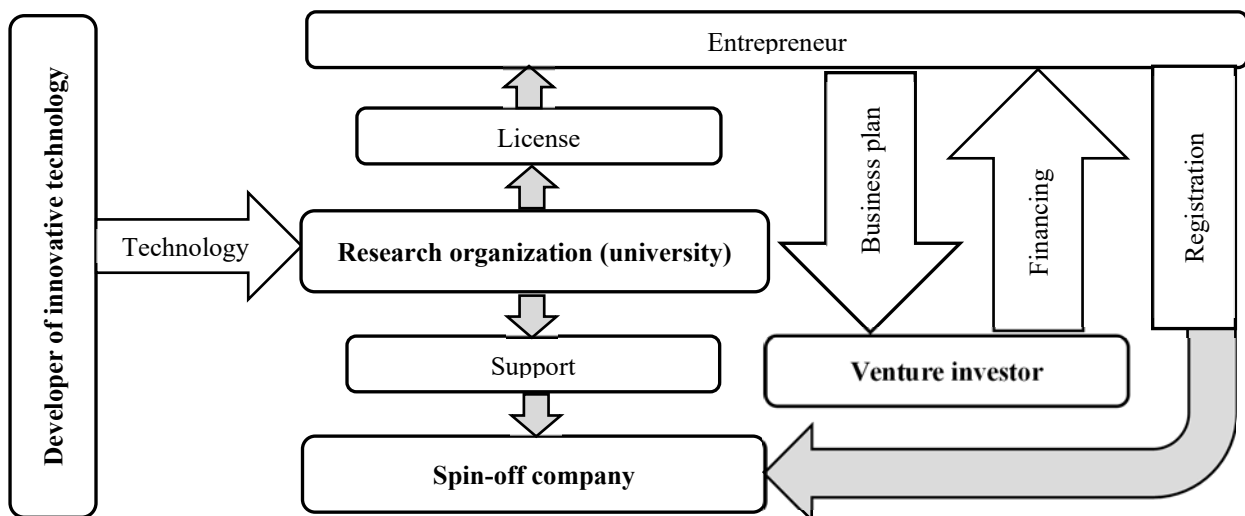


Figure 6 - Organizational principles of technology commercialization using a spin-off company  
*Source: own creation*

In the scientific literature on this issue, one can find situations when one publication defines a spin-off as a spin-off and in another - the same definition is used to describe a spin-out. When deepening the topic, it is necessary to carefully check what type of enterprise the spin-off refers to.

In the *spin-off model*, it is necessary that the university establish a special entity in the form of a limited liability company or a joint stock company, whose task will be to acquire the shares of the target spin-off company on behalf of the university. Assuming that the spin-off entity will be based on a patent, in this scenario the university transfers ownership of that patent to

the special purpose entity and then it contributes ownership of the spin-off entity by becoming a shareholder. The next shareholders are private, venture capital or other investors who provide funds for the development of the enterprise. The author of the technology receives profit, for example, through dividends (according to the current rules in each university on intellectual property rights), which the spin-off company pays to its shareholders. In this model, it is the university (as a shareholder of the spin-off company) that is obliged to prepare the technology for implementation, and the university has the right to dispose of this technology. The university may also be linked to the spin-off company in other ways, for example, in exchange for a share in the company it provides its research infrastructure for technology development purposes.

In the *spin-out* model, the existence of a spin-out company is not even mandatory. The scientist agrees with the university on the terms of granting him, as an individual, a license to use this property right, which he then, having concluded a license agreement with the university, provides in material form to the target spin-off company. Thus, the shareholders of the spin-off company are the scientist (as a person who has the right to dispose of the property rights of the university) and investors. Most often, the scientist "settles" with the university by transferring to it the appropriate license fees for the right to use the innovative technology.

Depending on the level of development of technology and the university's decisions, the scientist may be required, for example, to evaluate the technology (property rights evaluation is recommended). Similar to the licensing model, the recommended technology evaluation is carried out according to the "university-scientist (researcher)" scheme.

Spin-outs often raise important tax issues - the transfer of rights to R&D results (a non-cash contribution in a form other than the one adopted by the enterprise or an organized part of the enterprise) to a scientific enterprise, which is a legal entity, leads to income for the scientist. The amount of this income is defined as the nominal value of the shares acquired from the underlying enterprise for the corresponding monetary contribution. On the other hand, contributing to a partnership is a neutral activity according to the Personal Income Tax Act. This means that only the contribution to the partnership will not result in the scientist receiving income in the form of personal income tax.

## **CONCLUSIONS AND RECOMMENDATIONS**

The main result of the study can be the conclusion that planning and management of innovation activities is the purpose of applying innovation models or commercialization models. The article scientifically substantiates a methodological approach to the formation of models of commercialization of intellectual property, on the basis of this approach a system of models for decision-making by the subjects of technology commodification was developed and proposals for the formation of a national system of technology commodification were developed, as a component of the national international system of the intermediate type. It should be noted that each of the considered models of commercialization of innovative technologies has its own advantages and disadvantages, which is mainly manifested in the amount of commercial result (profit), costs of the commercialization process and in the points of responsibility for the innovation process. In the future, it is necessary to compare the models of commercialization of innovative technologies with the capabilities of production and commercial industrial enterprises and assess the potential of their practical use.

Their use will allow to effectively bringing innovative technologies and products to the market because the innovation process will be optimized. The formation and implementation of innovative business models for commercialization of intellectual property (products and technologies) in modern conditions will significantly increase the economic sustainability and efficiency of innovative enterprises, significantly reduce the number of "unsuccessful" projects

and reduce the amount of "unprofitable" investments. This will create conditions for improving the innovation climate and increasing the innovation activity of enterprises, regions, territories and the country as a whole.

It is proposed to use the proposed system of models of intellectual property commoditization as a basis for the formation of a national standard for commercialization and transfer of innovative technologies, as the proposed models provide real opportunities to find and substantiate the factors and prerequisites for the adoption of commercial decisions that may result in the process of commercialization of intellectual property in the current economic conditions. The use of such a state standard will make it possible to manage the production and commercial chains of technology commercialization, which will interact with each other in the conditions of certain institutional constraints and institutional norms, and systems of stimulating commercialization processes will encourage enterprises to choose the most effective solutions that will ensure the achievement of the target goal - effective transfer of new technologies into economic activity. At the same time, the mechanisms of intellectual property commodification will be determined by the effects of geographical integration of intellectual property.

The results obtained by the authors create a system of formalized relations in the process of transfer and commercialization of intellectual property objects in the form of proposed models of support for economic decision-making, the effectiveness of adoption of which will significantly reduce the level of transaction costs of the subjects of technical transfer due to the effects of intellectual property specialization.

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